Syllabus: CHEM 2801RBT
Special Topics: Cooking, Chemistry, and the Senses
1 credit hour - Pass/Fail only

Instructor
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Course Description
This course explores the relationship between food, its chemical composition, and human sensory perception. Students will examine how compounds in food interact with the senses to influence flavor, aroma, texture, and color. For example, volatile compounds such as pyrazines and furans contribute to aroma by interacting with olfactory receptors, while chemical reactions such as the Maillard reaction create the browned surfaces and distinctive flavors found in foods like bread and grilled meats. Color also plays an important role in perception; for instance, lycopene gives tomatoes their deep red color and may influence how sweetness is perceived. Understanding these principles can enhance culinary techniques, improve food quality, and deepen appreciation of the dining experience.

Learning Outcomes
By the end of this course, students will be able to:
- explain basic chemistry concepts related to cooking and food perception, including taste, smell, texture, and sight
- describe how chemical compounds and reactions influence sensory experiences in food
- demonstrate basic and advanced cooking skills through participation in guided cooking sessions with a professional chef
- connect culinary techniques to scientific principles discussed in class

Course Schedule and Format
The course includes nine 60-minute lectures, four 120-minute cooking/lab sessions, and a final project. Because this course is offered as part of a study abroad program, students may not drop the course without permission from the program director. In addition, Institute policies regarding Final Instructional Class Days and Reading Periods do not apply. Since this course involves the handling, preparation, and tasting of food, students with allergies or dietary restrictions should notify the instructor and chef(s) as early as possible.

Textbook
No textbook is required.
Lecture material is drawn from the following sources:
- *On Food and Cooking*, 4th Edition, by Harold McGee
- *Science of Food* by Russell, available free online through ChemLibreTexts

Students are not required to purchase *On Food and Cooking*; it is listed only as an optional reference.

Additional Materials
- ChemDraw: Free download of professional drawing software for creating organic structures
- Photography device: A smartphone or camera capable of taking high-resolution photographs (at least 2400 x 3000 pixels or 3000 x 2400 pixels)
- Two 1-liter glass food storage containers: These may be purchased from department stores in Lyon and will allow students to take prepared food home. Students should remember to bring them to each cooking session.

Grading / Passing Requirements
To pass the course, students must:
- attend and participate in at least 7 of 9 lectures

- participate in at least 3 of 4 assigned cooking sessions
- complete the group assignment
- complete the final project

Cooking Sessions
The course includes four 2-hour cooking sessions led by a professional chef from L'Atelier Gourmand in Lyon, France. Students will work in pairs within their assigned group (A or B). Students may choose a different partner for each cooking session, but partners must remain within the assigned group.
These sessions will introduce students to techniques associated with French cooking and help them connect those techniques to concepts covered in class. Because the cooking site is located in central Lyon, students must arrive promptly in order to participate.

Group Assignment
Students will work in small assigned groups to give a 10-15 minute presentation on an assigned topic related to food, chemistry, and the senses. Additional details for the group assignment will be provided on Canvas.

Final Project
For the final project, each student will submit a one-page detailed recipe that includes:
- a brief description of an organic chemistry molecule present in the recipe
- the ChemDraw structure of that molecule
- an explanation of the molecule's impact on the senses
- a high-resolution representative image of the expected final product

For example, a student might submit a recipe for a French grilled cheese sandwich along with a discussion of a relevant molecule, its sensory role, and a photo of the finished dish. Examples will be posted on Canvas.

Student Responsibilities
Students are responsible for all material presented in lectures, as well as all announcements made in class. Students are also expected to check their mail.gatech.edu account regularly for course updates and communication.

Academic Integrity
Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. Review Georgia Tech's Honor Code and the student Code of Conduct.
Any student suspected of cheating or plagiarism on a quiz, exam, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

Students with Learning Needs and Special Accommodations
If you are a student with learning needs that require special accommodation, contact the Office of Disability Services (404-894-2563) as soon as possible to make an appointment to discuss your special needs and to obtain a letter of accommodation. Please also email me as soon as possible to set up a time to discuss your learning needs.

Student-Faculty Expectations Agreement
At Georgia Tech, we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. The Student-Faculty Expectations articulate some basic expectations that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.

ACADEMIC SUPPORT WHILE ABROAD
Given the typically small class sizes associated with study abroad programs, students are encouraged to seek

academic assistance from their instructors or teaching assistants during scheduled office hours or by arranging individual appointments, as needed. In addition, students may access free tutoring services through Georgia Tech Knack (see success.gatech.edu/tutoring for more information). Students are also expected to notify the instructor and/or program director promptly if circumstances arise that may adversely affect their academic performance.